FOREST RESEARCH NEWS FOR THE MIDSOUTH

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SOUTHERN FOREST EXPERIMENT STATION, FOREST SERVICE, U. S. DEPARTMENT OF AGRICULTURE

Stink Won't Stop 'Em--They Like It

Woodpeckers, that is.

Smelly, oily preservatives for utility poles don't seem to keep them from chiselling away and doing damage that for some companies is more costly than losses by lightning, wind, and ice. Nobody knows why the birds find the poles appealing. Finding out probably would be a big help in devising preventives.

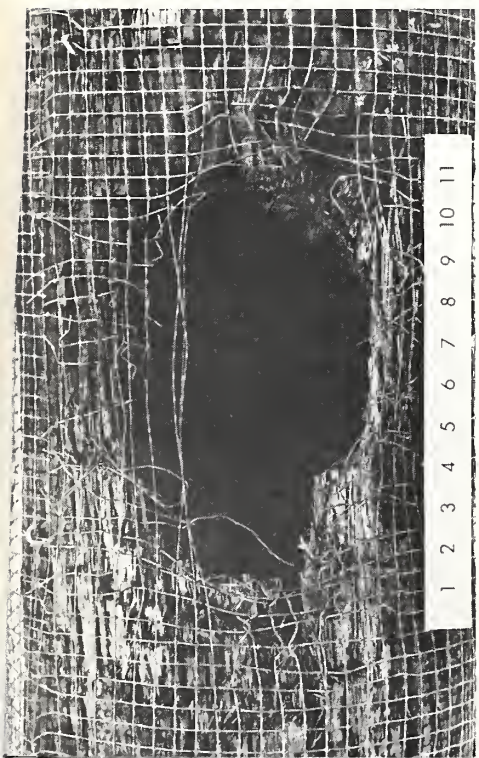
Southern Forest Experiment Station ornithologist Robert L. Rumsey in Pineville, Louisiana, while searching for ways to ward off damage, has turned up some surprising facts. One is that nests laboriously pecked into newly-creosoted poles don't provide security for a new brood of woodpeckers. Instead, they are death traps. Most eggs do not hatch, and the few nestlings that do emerge soon die.

This discovery was made when 187 eggs in newly-treated poles were observed while collecting birds for testing in cages. Only 39 of these eggs hatched, and all the young died within 3 days.

To find out why, hen eggs, some in contact with creosoted chips and some exposed only to creosote fumes, were placed in an incubator. Embryos in eggs on creosoted chips usually died within a week. Although the fumes did not kill as quickly as treated chips, they too were toxic to embryos.

This might seem like good news for utility men and the Forest Service scientists who work long and hard to discourage the birds. But not so. If anything, research efforts will increase. For when woodpeckers stay away from power lines they are among the most valuable birds in the forest. They feed largely on insects in bark and wood, and thus help to prevent outbreaks that kill trees and ruin logs.

The research, designed to find economical means of protecting poles, is financed by five utility companies —Arkansas Power and Light, Central Louisiana Electric, Gulf States Utilities, Louisiana Power and Light, and Southwestern Electric Power—plus Weyerhaeuser Company.



Woodpeckers sometimes cut through wire cloth—a common deterrent. Scale is in inches.

Pileated woodpecker, found in Eastern and Southern United States.

NESTS MOST DAMAGING

There are three types of damage to poles. Least troublesome are shallow excavations made around cracks or weather checks by birds looking for food. Later, insects may get into these excavations or lay eggs there, but the damage is comparatively minor. Probe holes 2 or 3 inches deep are a second com-

Numerous test probes ore mode in o pole before o covity is completed. Woodpeckers select pole though live ond dead trees ore neorby.

mon form of woodpecker activity. They are probably made by birds looking for a nesting site. Rumsey estimates that at least 20 such holes are made for every completed nest cavity. Unless numerous or concentrated, these holes don't greatly weaken the poles, but they do provide access for decay organisms.

Nest cavities are the most serious damage. The largest cavities, made by pileated woodpeckers, extend 8 to 24 inches downward from an entrance 3 to 4 inches in diameter. A shell of wood as thin as 1 inch is left around the cavity. Similar but smaller nests are made by redheaded woodpeckers. Both pileateds and red-heads are found in the Southern and Eastern United States. In other parts of the country, ladder-backed, golden-fronted, and acorn woodpeckers are troublesome.

These birds chisel away on smelly poles even though the surrounding forest may be full of trees, both living and dead. They seem to prefer newly treated poles over those in service a few years.

OVERLAYS HELP

So far, the best way to prevent attacks is to wrap ½-inch mesh hardware cloth around the pole. This covering, which can be installed for about $35 before a pole is put in service, is usually effective. Pileated woodpeckers sometimes tear through it, though, and the wrapping results in partial loss of the wood pole's insulating qualities.

Mechanical devices designed to frighten birds have been tried, but the woodpeckers quickly become accustomed to them. Painting the poles in bright colors is also ineffective. In some tests damaged poles were left standing when new ones were installed, but woodpeckers attacked the new poles anyway.

Chemicals also are being tried as repellents. Since woodpeckers seem able to excavate without bringing wood into contact with their taste buds, chemicals that act through the sense of taste appear hopeless. Some chemical that irritates the nerve endings of the feet seems most likely to succeed, but none tried so far has proved satisfactory.

Rubber overlays have stopped attacks in some cases. The coatings are designed to be too smooth for perching and too hard for penetration. The birds can't peck if

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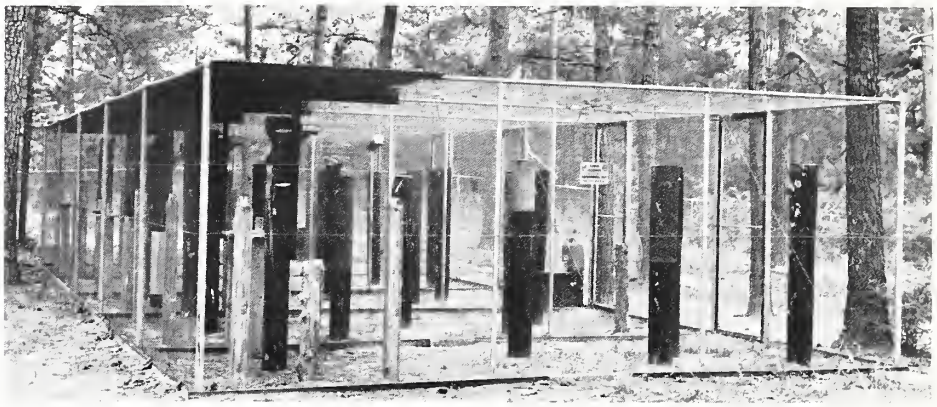

Aviory ot Alexondrio Forestry Center where tests of woodpeckers' oppetite for utility poles is tested. Different cootings ore opplied to pole sections for testing.

Mississippi Report Analyzes Forest Inventory, Industry

Mississippi is entering a new era in forestry. Evidence is found in a recently published analytical report by the Forest Survey research group of the Southern Station. The report, based on field work completed in 1967 and compared with an inventory 10 years before, helps to clarify timber trends in the State.

Although forests continue to be the dominant land use in Mississippi, occupying 56 percent of the total land area, forest land in the State declined 2 percent in the decade between surveys. Clearing of hardwood forests was extensive in the Delta, continuing a long-term trend. Land reverting to forest in the uplands of central Mississippi partly offset the Delta loss. In other regions, changes were small.

Statewide, intensified forestry has helped to improve stocking (a measure of the extent to which the growth potential for a site is utilized by trees). Fire protection, planting, seeding, and natural reproduction have reduced the acreage of nonstocked forest to less than 1 percent.

Improvements in stand density were noted in all regions and were most striking in the southern and central portions of the State. A substantial rise in numbers of 2- and 4-inch diameter trees augurs well for the future, Survey leaders believe.

Softwood growing stock volume, mostly pines, has increased 63 percent since 1957. Mississippi timber stands now contain 6.6 billion cubic feet of softwood growing stock.

Despite land clearing in some areas, the hardwood resource has remained stable. The 6.5 billion cubic feet of growing stock nearly equals the softwood volume. A slight decline in trees 19 inches and larger was more than compensated for by the buildup in smaller sizes.

Microfilm Printouts Available

Marking inauguration of a new service, detailed statistics supplementing the recently completed Mississippi Forest Survey report described on this page are available in printout form from a microfilm reader-printer.

Thirty special tables of county resource statistics for all 82 counties in Mississippi can be obtained at cost, singly or in any combination. A list of the tables and cost per county is available from the Forest Survey at the Southern Station. Cost of the complete set is $1,549.80. Minimum request must total $25.

Joe Christopher, Research Leader for Survey, calls the microfilm development "a real breakthrough in anticipating the needs of industries, consultants, and other public agencies."

What has been done with Mississippi resource information will provide a basis for assessing needs of other States. Forest Survey researchers will tackle Arkansas next.

Timber harvested from Mississippi forests totaled more than 450 million cubic feet in 1966—the biggest harvest in a decade. In the interval between surveys, output of roundwood for pulpwood eclipsed saw logs as the leading product.

A canvass of Mississippi's primary wood-using plants revealed some 450 operations of various kinds. Mississippi timber was pulped, sawn into lumber, cut into veneer, treated with preservatives, sawn into furniture and handle squares, and burned for fuel. Markets are improving for a variety of products from pulpwood to veneer. In most cases these outlets are replacing once-numerous small sawmills. The 242 small sawmills in the State represent one-seventh the operating number during the peak years after World War II. Such mills were profitable when labor costs were low and the scattered nature of timber stands discouraged competition from large mills. Now stumpage owners find other producers bidding effectively for their timber.

Even with industrial activity at a recent high, timber growth greatly exceeded removals in 1966. And researchers believe that timber productivity of Mississippi forests is far below potential. They estimate that the current annual yield of 50 cubic feet per acre can be almost doubled. Quality and tree-size distribution of the existing inventory can also be improved. Thinning, removing cull trees, and regulating rotation age are some of the methods available to foresters to improve yield.

Southern Station researchers believe it is inevitable that Mis-

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Camille Timber Damage Assessed

The powerful winds of Hurricane Camille snapped off or blew down about 290 million cubic feet of timber in 15 Mississippi counties, according to Dr. T. C. Nelson, Director of the Southern Forest Experiment Station. The loss included about 1.2 billion board feet of sawtimber.

A comprehensive appraisal by the Forest Survey of the Southern Station showed that an estimated 1.9 million acres of forest land in the 15 counties were damaged. Hancock, Harrison, Lamar, and Pearl River Counties were hit the hardest, Dr. Nelson said, and suffered two-thirds of the damage.

The Forest Survey sent foresters into the 15-county area immediately after the storm. Trees were measured at hundreds of sample locations throughout the area. The survey report is the most detailed appraisal of storm damage to timber to be made, he said.

The foresters found that both pines and hardwoods of all sizes were affected. About 60 percent of the damaged pines 5 inches in diameter and above at breast height were broken anywhere from 6 to 20 feet above the ground. The rest were blown over. The majority of affected hardwoods were completely blown down rather than broken.

"The loss of timber in the 15 counties nearly equals the volume that otherwise would have been harvested during the next 3 years," Dr. Nelson said. The volume in uprooted and broken trees is equal to nearly 2 years net annual growth. In Hancock, Harrison, Lamar, and Pearl River Counties, the amount lost exceeded the equivalent of 4 years of growth.

"Most of the damaged timber is salvable for pulpwood and saw logs, however," he said. "In fact, salvage operations are underway. Wood-using plants in southern Mississippi are operating with material obtained primarily from damaged stands. Numerous temporary woodyards have been established, and emergency sprinkler systems have been devised to keep the stored wood from being infested by insects and fungi."

Dr. Nelson cautioned owners of downed timber not to let it lie on the ground too long, preferably not beyond early spring.

Woodpeckers, From P. 2

they can't perch, but getting materials to adhere to a creosoted pole is difficult. Either a satisfactory bond can't be effected, or the creosote blisters through. Poles treated with a nonoily preservative have been coated satisfactorily and are now being exposed to woodpeckers.

The Southern Station researcher doubts that a single, simple, foolproof method will be found to prevent woodpecker attack. A combination of treatments probably will be devised for an overall pole-line management system. For maximum effectiveness and economy, protective measures may be varied according to habitat and risk of attack.

One thing sure, a foul smell is no deterrent.

Pine forests in the wake of Hurricane Camille.

Making Studs Go Straight

If you steam a straight piece of southern pine wood and then bend it, the piece will stay bent. Well then, why can't you take a normally bent piece of southern pine and steam-straighten it?

No reason at all, according to Southern Forest Experiment Station researcher Peter Koch, who is developing a 24-hour process to do just that.

Preliminary tests at the Station's wood utilization laboratory in Pineville, Louisiana, indicate that the new process will dry lumber from green condition to 10 percent moisture content in one-fourth the time and with one-half the energy spent in conventional drying. And the lumber will be considerably straighter. The finding should make it possible to design a kiln that will dry lumber continuously, rather than in batches. Eliminating costs of placing and removing sticks would be one of the benefits.

Tests made so far have been mostly with 8-foot studs sawn from veneer cores. The green 2-by-4 lumber was clamped rigidly in frames, in almost total mechanical restraint against crook, bow, and twist. While in the frames, the studs were kilned for 21 hours at a dry-bulb temperature of 240° F. (160° wet bulb). Then for the last 3 hours they were steamed at a dry-bulb temperature of 195° F. (185° wet bulb). Throughout the 24 hours air was circulated around them at 1,000 feet-per-minute velocity. Then the studs were removed from the kiln and cooled 48 hours before the clamps were released.

The 24-hour process required only half the energy (heat, humidity control, and fan) that is consumed in the conventional 100-hour, low-temperature schedule. Average crook and twist were reduced by about 50 percent.

A test is planned to learn whether the 240° steam-straightening process will reduce warp caused by changes in moisture content when the studs are stored or in use. Strength of studs dried by the new process also will be evaluated.

Dr. Koch is working on o process to dry southern pine studs in 24 hours.

Pine Root Parasite Discovered

A parasitic weed turns out to be the guilty critter. Senna seymeria is its name, and it saps slash pine trees of their color and strength. Until now, no plant was known to parasitize living roots of southern pines.

Southern Forest Experiment Station researchers at the Alexandria Forestry Center have identified the culprit after careful investigation. They believe land managers would do well to learn to recognize the plant, which may be the cause of some heretofore unexplained problems with pine trees.

Senna seymeria whose scientific name is seymeria cassioides, grows as tall as 40 inches, is bushy-branched and slender. Leaves are divided into thread-like segments. Foliage is green, sometimes with a purple hue, and turns almost black when dry. Small yellow flowers bloom from August to October. From a distance, large plants look like seedlings of eastern redcedar.

The parasitism was discovered in 3- and 4-year-old slash pine stands near Panama City, Florida. Many pines on heavily infested areas had a hundred or more of the weeds within 3 feet. The weed seeds bountifully. Seventy-five percent or more of the seeds germinated in laboratory tests.

Excavations around sickly pine trees showed that many seymeria plants had attached themselves to pine tap roots and lateral roots a few inches below the soil surface. The parasitized trees were growing slowly and had most of the needles in

Senna seymeria parasitic weed growing between two pine seedlings.

clusters at the branch tips. Trees up to 5 feet tall died after several of the weeds had weakened them for at least a year. In a 15-year-old plantation with a dense stand of seymeria, tree growth was unusually slow. Apparently the parasite retards growth of large as well as small trees.

To determine if materials were transferred through the roots from one plant to another, dicamba and 2,4-D amine were sprayed to cover the foliage thoroughly, without dripping off into the soil, on either a seymeria or a pine where the two plants were growing within 18 inches of each other. Pines for these trials were not in dense stands, and most of them were surrounded by two to four weeds. Only chlorotic pines were included. A total of 36 such associations of pines and weeds were located. In 18, the chemicals were sprayed only on the pines. In the other 18, only the weeds were treated.

Results of the two treatments were similar. In all, 15 of the seymeria plants died after the pines were sprayed, and 11 of the pines died after the weeds were sprayed. The apparent two-way transfer of the herbicides was unexpected.

Where is this parasitic weed harmful to pines? Its range includes the Coastal Plain from Louisiana to Florida and Virginia, and reaches inland as far as Tennessee. Most common on dry areas, the plant is almost nonexistent where water stands on the surface for long periods in winter. Probably the water kills the seeds, which mature and disperse in fall.

The weed flourishes near roadsides, on banks of drainage ditches, and around stump holes —indicating that soil disturbance may help it get a start. Researchers found the weeds thickest on plots where soil had been disked to prepare it for pine seeds. Apparently, dense stands of native grasses prevent or limit growth of seymeria seedlings. In addition to sandy flatwoods, the weed also grows on sandhills, pocosin margins, and in savannahs—all pine sites. On such sites the plant can disrupt regeneration and growth.

Land managers beware!

South's Pulpwood Production Soars

In 1968, the South produced almost two-thirds of the Nation's pulpwood. The harvest in the 12 States was 37,075,355 cords, breaking last year's record by 10 percent. Three-fourths of the 3.4-million cord increase was in pine roundwood and residues from sawmills and veneer plants.

These findings are reported in "Southern Pulpwood Production, 1968," a report by Roy C. Beltz, USDA Forest Service. The report is published jointly by the Southern and Southeastern Forest Experiment Stations at New Orleans, Louisiana, and Asheville, North Carolina. The Southeastern and Southwestern Divisions of the American Pulpwood Association cooperated in gathering the data.

Roundwood production, which had declined slightly in 1967, rose 9 percent in 1968 to 29,500,697 cords. The use of residues for pulp increased 17 percent to a record 7,574,658 cord-equivalents.

Ten of the States increased their annual pulpwood production. Mississippi reported the largest annual rise ever recorded in the South—1,030,028 cords. The spectacular gain moved Mississippi from sixth to third place. Georgia maintained its lead in

total production with more than 6.9 million cords.

As in the past 6 years, pines and other softwoods accounted for about three-fourths of the total roundwood harvested. The remainder consisted of oaks, gums, and other hardwoods.

Residues continued to be used increasingly for pulping. Softwood residues received by southern pulpmills increased more than 19 percent; utilization of hardwood residues rose 7 percent. The total gain equalled more than a million cords. In Virginia, increased residues offset a roundwood decrease. In the Carolinas, a drop in total pulpwood production was caused by declines in residues.

All but two Southern States increased their pulping capacity last year. Expansion of existing mills and construction of seven new ones boosted daily pulping capacity to 77,140 tons. Mississippi reported the highest gain in capacity, 1,705 tons per day more than its 1967 total. As in total production, Georgia remained in first place with a pulping capacity of 13,366 tons daily.

The center of pulping capacity in the South is moving westward. Expansion of this capacity was greatest in Mississippi, Alabama, Louisiana, and Arkansas.

Analysis of roundwood production by county shows no changes in leadership. The three Alabama counties—Baldwin, Washington, and Choctaw—that led southern roundwood output in 1967 retained their positions last year. Each increased its output. Several counties, mostly in Texas, eastern Oklahoma, and southern Louisiana, reported roundwood production for the first time. A total of 49 counties harvested at least 100,000 cords, as compared to 41 in 1967. More than a third were in Alabama.

Copies of the report are available from the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, Louisiana 70113, and from the Southeastern Forest Experiment Station, P. O. Box 2570, Asheville, North Carolina 28802.

Pulpwood production in the South during 1968, and change since 1967

State	Pulpwood	Change
	Thousand cords	*Percent*
Alabama	6,131.1	+ 9
Arkansas	2,297.7	+ 4
Florida	3,243.5	+11
Georgia	6,919.3	+ 9
Louisiana	3,011.5	+13
Mississippi	3,954.5	+35
North Carolina	3,156.2	(1)
Oklahoma	155.3	+31
South Carolina	2,897.3	− 2
Tennessee	417.0	+ 6
Texas	2,520.0	+26
Virginia	2,372.0	+ 1
All States	37,075.4	+10

[1] Less than 0.1 percent decrease.

Miss., Cont'd from P. 3

sissippi's timber resource will continue to become increasingly important in meeting growing national demands. Recent industrial expansion, most notable in the pulp industry, is only a preview of the activity that will be stimulated by a wisely-managed forest resource.

Copies of the new resource analysis, "Forest Resources of Mississippi" (SO-17), are available on request from the Southern Station in New Orleans, as are recent corollary reports, "Mississippi Forest Industry" (SO-12), and "Forest Statistics for Mississippi Counties" (SO-15).

Timber Scene Changes

New Forest Survey findings show that about 1 out of every 6 acres of commercial forest in northwest Florida has been artificially reforested. More than one-half million acres have been planted since 1959—mostly to slash pine. Since 1959, when the last survey was made, the slash pine forest type has increased 34 percent, and now leads all types with 1.7 million acres.

Extensive areas formerly occupied by scrub oaks have been converted to pine. The scrub oak forest type has been reduced by more than 300,000 acres, or about one-third. The area of nonstocked forest land has been reduced by half, from 1.4 to 0.7 million acres. Average stand density of all live trees 5.0 inches d.b.h. and larger is now 41 square feet per acre, compared with 36 square feet in 1959 and 30 square feet in 1949. In spite of the buildup in average stand and density, 1 out of every 2 acres is still either nonstocked or poorly stocked.

Since 1959, the reversion of some 320,000 acres of former agricultural land to forest has about offset the loss of commercial forests to other land uses. Commercial forests still occupy 5.7 million acres, or about 79 percent, of the total land in this 16-county area.

There has been little change in the forest ownership pattern except for a 9-percent reduction in the amount of farm woodland. About 4.5 million acres, or more than 78 percent, of the commercial forests are privately owned. Forest industry has about 2.0 million acres of this total. Practically all of the publicly-owned forest land is in three holdings: Apalachicola National Forest,

Eglin Air Force Base, and the Blackwater River State Forest.

Volume of softwood timber has increased by 470 million cubic feet since 1959, or almost 28 percent. Volume of hardwood timber has increased by 130 million cubic feet, a little less than 10 percent.

Although annual removals of growing stock have doubled over the past 10 years, net growth exceeded removals by an estimated 59 million cubic feet, or 56 percent in 1968. In volume, pulpwood is the leading timber product.

The new survey report, entitled "Forest Statistics for Northwest Florida, 1969," was prepared by the Southeastern Forest Experiment Station, with the assistance of the Florida Forest Service in collecting data. Herbert A. Knight is the author. Copies are available from the Southeastern Station, P. O. Box 2570, Asheville, North Carolina 28802.

Let 'Em Eat Cake

From late fall until early spring, breeding cattle don't get enough protein from southern pine-bluestem range. The deficiency impairs calf production, unless large amounts of protein are added to the cows' diet.

How can this protein deficiency be remedied without spending a great deal of money?

Feed the cattle cottonseed cake every other day, says Vinson L. Duvall, after a 4-year study in central Louisiana in which he compared three methods of feeding cattle during the winter. In one method, cows were fed on alternate days. In another, salt was mixed with cottonseed meal to control the amount eaten. In a third method, cows were fed daily.

Dr. Duvall, then a range scientist and now an assistant director of the Southern Station, found that the cost of feeding cottonseed cake on alternate days was 40 percent less than for the daily schedule. Moreover, the cattle weighed more and had a higher percentage of calves than those fed daily. Cows fed the salt-meal mixture had low reproductive success.

A detailed report of the study is available from the Southern Station in New Orleans.

Low-Cost Wood Homes

Low-cost housing is more than a phrase widely used by city planners and urban renewal experts. It is of prime interest to both rural and urban dwellers throughout the country.

A new book, "Low-Cost Wood Homes for Rural America—Construction Manual," gives builders step-by-step information on every phase of house construction. The basic building materials are wood and the many wood-base materials now on the market. Experience shows that a home built in accordance with the principles described in the manual will stay sound for more than 35 years if properly maintained.

The Forest Products Laboratory of the Forest Service in Madison, Wisconsin, has done research for many years in all phases of house construction. L. O. Anderson, Forest Products Laboratory engineer, is author of the new manual, which describes and illustrates every step of building a house from construction of the foundation to final painting and finishing.

Different types of building materials are discussed to help a builder select what is best for his needs. Every diagram is labelled, and the accompanying text gives clear explanations. Besides contractors and laborers concerned with actual construction, the manual will be useful to home owners who will gain an understanding of how their homes are built and how to make improvements. It will also help those who finance homes to be sure they are making a sound investment.

Copies of the manual are available from the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, Louisiana 70113.